Planning Department
168 North Edwards Street
Post Office Drawer L
Independence, California 93526

Phone: (760) 878-0263
(760) 872-2706
FAX: (760) 878-0382
E-Mail: inyoplanning@telis.org

STAFF REPORT

AGENDA ITEM NO. 7 (Action Item - Not A Public Hearing)

MEETING DATE: January 12, 2000

SUBJECT: **Review of Draft Comments on the Draft Yucca Mountain Nuclear Waste Repository Environmental Impact Statement**

Supervisoral District: Countywide

Requested Action: In its capacity as the Inyo County Environmental Review Board, the Planning Commission is requested to review staff's draft comments on the Draft Environmental Impact Statement for the proposed Yucca Mountain Nuclear Waste Repository and to direct staff to revise comments as needed. The revised comments will be forwarded to the Board of Supervisors for adoption prior to submittal to the U.S. Department of Energy.

Project Planner: Andrew Remus, Project Coordinator

BACKGROUND:

The proposed Yucca Mountain Nuclear Waste Repository (located in Nye County, Nevada) - as a Federal project with the potential to effect the human and natural environment - is subject to the National Environmental Policy Act (NEPA). NEPA requires public disclosure of the nature of the proposal, characterization of the environment potentially affected by construction, operation, and closure of the repository, and discussion of methods of mitigating negative effects on the environment. The vehicle for describing the project and discussing impacts is the Environmental Impact Statement (EIS).

The U.S. Department of Energy released the Draft EIS (DEIS) for the proposed Yucca Mountain Nuclear Waste Repository in August, 1999. The DEIS is subject to a 180-day public review period ending February 9, 2000. Since release of the document, County staff and Yucca Mountain Repository Office consultants have been active in reviewing the DEIS, attending meetings of the Affected Units of Local Government, and discussing the contents of the DEIS with a wide variety of Federal, State, County and local interests, both in Nevada and California.

Staff has prepared a draft Inyo County response to the DEIS (see attached). This draft is scheduled for review by the Planning Commission on January 12, 2000, by the Southeast Area Citizen Advisory Committee (SACAC) on January 17, 2000, and the Inyo County Board of Supervisors on January 24, 2000. Changes and additions to the commentary requested by the Planning Commission will be

incorporated into the draft DEIS comments and presented to the SACAC and the Board of Supervisors at the scheduled meetings.

RECOMMENDATION:

Adopt the comments on the Draft Environmental Impact Statement submitted by staff and forward these comments to the Inyo County Board of Supervisors for their review and submittal to the U.S. Department of Energy.

DRAFT

INYO COUNTY, CALIFORNIA

COMMENTS ON

The Draft Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada

The County of Inyo, State of California, is an Affected Unit of Local Government under the Nuclear Waste Policy Act of 1984, as amended. Inyo County has prepared its response to the U.S. Department of Energy's (DOE's) *Draft Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada* (DEIS). This response expands upon and supplements the comments made by Inyo County officials at the November 4, 1999 U.S. Department of Energy hearing on the Yucca Mountain Draft Environmental Impact Statement (held in Lone Pine, California).

The County has identified a number of issues regarding the Draft Environmental Impact Statement which should be addressed by the Department of Energy in the course of developing the Final Environmental Impact Statement. These issues are discussed below, organized by general topic area. Directly following each subsection - where appropriate - is a recommendation specifying actions that should be taken by DOE.

Compliance With the National Environmental Policy Act

Treatment of Project Alternatives

Inyo County recognizes that the proposed Yucca Mountain Nuclear Waste Repository is provided significant exceptions to normal NEPA requirements via the Nuclear Waste Policy Act of 1982, as amended. Specifically, DOE is exempt from considering the need for a repository, the timing of availability of the repository, alternatives to geologic disposal, or alternatives to the Yucca Mountain site. The Department of Energy, in developing its NEPA evaluation for the proposed repository is, however, obligated to evaluate reasonable alternatives outside the scope of what Congress has approved or funded because the findings of the Environmental Impact Statement may serve as the basis for modifying the Congressional mandate. This is part of the Congress-informing function of NEPA necessary to placing the proposal in a proper context for purposes of decision-making.

The NEPA exemptions provided by Congress have been interpreted by DOE to limit analysis of project alternatives to a discussion of a range of repository designs, generic treatment of varying combinations of rail and truck transport, and inclusion of two variations of a "No-Action Alternative". The No-Action Alternatives are stated to be (in

the DEIS itself) untenable and included simply for comparison with the proposed action. DOE recognizes that neither of the no-action alternatives is likely to be implemented should the repository not be built. The development of improbable and/or unreasonable alternatives runs counter to DOE's obligation under NEPA to rigorously explore and objectively evaluate all reasonable alternatives, even when such alternatives are outside the jurisdiction of the Department of Energy (40 CFR 1502.14 (a), (c)).

The inclusion of two project alternatives - in the form of variations of a "No Action Alternative" serves as recognition, by DOE, of its obligation to analyze alternatives to construction of the repository, but the analysis of these alternatives is not on a par with that of the proposed repository itself. In fact, the DEIS does not even begin to develop and evaluate project alternatives at a level of detail equivalent to that provided for the proposed action. Such treatment of project alternatives cripples decision-makers in any attempt to discern how development of the repository compares, in the terms of cost, time, resource commitment and risk, to technologically feasible alternatives to Yucca Mountain. Per Council on Environmental Quality (CEQ) Regulations, an EIS *should present the environmental impacts of the proposal and alternatives in comparative form... sharply defining issues and providing a clear basis for choice among options by decisionmakers and the public* (40 CFR 1502.14).

Lacking the detailed alternative project descriptions, environmental risk, and fiscal impact analysis necessary to develop and compare alternatives to the proposal, the DEIS fails to meet that section of NEPA which requires the study, development and description of *appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources* (42 USC Section 4332 (E)).

The statement of underlying need determines the range of alternatives in the DEIS (40 CFR Section 1502.13). An action is proposed to meet the underlying need. Alternatives that do not meet the underlying need have no place in the DEIS. The "no-action" alternatives "...mean the proposed activity would not take place, and the resulting environmental effects from taking no action would be compared with the effects of permitting the proposed activity or an alternate activity to go forward" (CEQ, Forty Questions, 51 Federal Regulation 15618).

Ultimately, the unresolved conflict is whether the deep geologic repository called for in the Nuclear Waste Policy Act can and will be developed, or will be displaced by some other method of solving the problem of storage of spent nuclear fuel. This lack of meaningful, well-developed alternatives supportive of rational decision-making violates the spirit and intent of NEPA. It is well within DOE's purview to provide Congress with analysis of a range of feasible alternatives which achieve both the purposes of NEPA and the intent of the Nuclear Waste Policy Act. Absent a balanced and comprehensive approach to complying with NEPA, the DEIS leaves decision-makers without the information necessary to weigh options and alternatives for disposal of spent nuclear fuel and high-level radioactive waste.

Specific Recommendation: DOE should eliminate the current project alternatives described in the DEIS and develop a range of reasonable project alternatives, providing analysis of each at a level of detail matching that provided for the proposed repository. Alternatives should include: 1) a no-action alternative that assumes permanent on-site storage of existing and future stocks of spent fuel and high-level waste; 2) an alternative which redirects DOE resources towards waste-volume reduction and consolidation of spent nuclear fuel and high-level waste at *existing* DOE storage facilities; and 3) any other alternative which can be implemented using available knowledge and technology which meets the need for storage of spent nuclear fuel and high-level waste expressed in the Nuclear Waste Policy Act. Alternatives must be screened to ensure they meet the underlying need.

Indirect Effects

CEQ regulations concerning treatment of direct and indirect project effects require *that indirect effects, which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable* be analyzed by the EIS (40 CFR 1508.8). The DEIS fails to address a number of impacts which DOE may view as indirect effects of the project. These impacts are discussed in detail in later sections of this commentary. By way of example, the most obvious effect of the project - which DOE apparently considers indirect and unworthy of analysis at this time - is the extensive transportation campaign necessary to move nuclear waste to Yucca Mountain. Operation of the proposed repository unquestionably includes the creation of new risks accruing to transportation of spent nuclear fuel and high-level radioactive waste to the repository site from locations all across the United States. The transportation campaign required to move waste into Yucca Mountain is later in time, generally further removed in distance and unquestionably foreseeable, yet the DEIS does not attempt to quantify the impact of the transportation campaign or develop the range of transportation alternatives necessary to compare risks to human populations and infrastructure. Even if the Department of Energy considers the transportation impacts associated with development and operation of the repository *indirect effects* of the project, the DEIS must include meaningful analysis of indirect effects of the project if the DEIS is to be considered a credible attempt to comply with NEPA. The NEPA exemptions provided DOE by the Nuclear Waste Policy Act do not include exemption from addressing such effects.

Consideration of Cumulative Impacts

The DEIS treats both geohydrologic and transportation impacts of the proposed repository as "stand alone" issues without recognition of the fact that the repository would operate in an environment already heavily impacted by past and ongoing nuclear waste activities. Territory adjacent to the Yucca Mountain site is heavily contaminated by radioactive materials as a result of decades of Atomic Energy Commission (AEC)/Department of Energy nuclear testing, while many of the roadways and rail corridors expected to be used for transport of spent nuclear fuel and high-level nuclear waste are already in service for the transport of low level and defense wastes to the Nevada Test Site and the Waste Isolation Pilot Plant in New Mexico. Operation of the Yucca Mountain repository would be one in a series of similar, linked actions undertaken by a single agency: the Department of Energy. The additional risks which Yucca

Mountain would place on groundwater resources, human populations and national and regional transportation resources must be analyzed and weighted within the context of past, present and foreseeable non-Yucca Mountain-related AEC/DOE actions in order to meet the intent of NEPA and allow decisionmakers and the public to place the proposed action in the proper context. The NEPA exemptions provided DOE by the Nuclear Waste Policy Act do not include exemption from addressing cumulative impacts.

Specific Recommendation: The DEIS should be amended to include description of the environmental context within which repository operations and transportation of nuclear waste will take place. Specifically, the DEIS needs to map and quantify the current level of environmental contamination in the region, and current and projected non-Yucca Mountain nuclear and hazardous waste shipment activity. This information needs to be compiled in a manner such that the incremental increase in risk posed by the repository and the total risk to humans and natural resources posed by the sum of DOE activities is clearly discernable.

Transportation

Deferral of Waste Routing Designations

The DEIS does not identify specific primary, secondary or emergency transportation routes for nuclear waste travelling through California, although the means for identifying appropriate routes are readily available. Specific routing decisions, in terms of the use of rail or trucks, designation of primary and alternate routes through Nevada and California, and analysis of the impacts of making the road, rail and emergency response improvements necessary to safely accommodate the waste transportation campaign are all deferred to the indefinite future.

Highway routes can be identified by applying national highway routing regulations to these shipments, and rail routes can be identified by examining available rail lines and their classification. The DEIS could have analyzed impacts specific to national transportation after first identifying the routes based on available information. Instead,

DOE performed a limited generic transportation analysis that avoided analysis of specific conditions, impacts, and hazards along the routes and the controversy associated with such determinations.

Specific Recommendation: DOE needs to apply current spent nuclear fuel and high-level nuclear waste transportation restrictions and requirements to the current national transportation system to determine which transportation corridors could be used for Yucca Mountain waste. An inventory of populations, emergency response capabilities, geographic and infrastructural limitations etc. must be developed preparatory to completion of a national-scale comprehensive risk analysis for eligible roadways and rail. The risk analysis methodology should be subject to public review as part of the revised DEIS and should provide a range of transportation-risk options and associated fiscal impact estimations.

California State Route 127

Given that Low Level Nuclear Waste is currently being transported on State Route 127 through Inyo and San Bernardino counties and shipments from DOE's Fernald, Ohio uranium plant cleanup operation are scheduled to begin using SR127 in 2000 to move waste packages to the Nevada Test Site, a precedent is now being set for expanded use of the route for high-level waste and spent fuel. The DEIS, however, does not acknowledge or project the role California corridors will play in moving high-level waste and spent fuel to Yucca Mountain.

State Route 127 is not an engineered route, to the extent that most of SR127 originated as a wagon trail that was paved over a period of time. Our recent survey of the route from its junction in the south with Interstate 15 at Baker to its junction with Nevada Route 95 in the north revealed numerous unbanked, unsigned high-speed turns, blind rises where visibility is nil, sustained grades in excess of modern standards and dozens of washes crossing both over and under the pavement. The road does not include turnouts or wide shoulders. State Route 127 variously parallels, crosses and recrosses the Amargosa River, a shallow desert river of considerable drainage which originates near Yucca Mountain and terminates in Death Valley. The Amargosa is typical of arid region streams, being dry most of the year, yet subject to rapid flooding and pronounced erosion and sedimentation. The route passes through four towns, two of which include sharp 90-degree turns in the middle of the town. There are few alternate routes useful to diverting commercial and passenger traffic around accident or clean-up sites.

In response to questions raised at the November 4, 1999 Yucca Mountain DEIS Hearing in Lone Pine, California, DOE staff clearly stated that the State of California would have to authorize the Department of Energy to use State Route 127 for transport of Yucca Mountain waste. This statement embodies a significant departure from DOE's practice in transporting low level nuclear waste on this route (which does not require State approval). The DEIS should explain what Yucca Mountain Repository-specific procedures are proposed to be put in place which would give States veto power over the use of their routes, and map the routes affecting by these same provisions.

Specific Recommendation: The DEIS needs to identify all California roadways and rail corridors eligible for use as primary, secondary or emergency routes for transport of waste to Yucca Mountain. Procedures for selecting routes and the role of state and local agencies in route selection and transport notification should be explained. Unless California State Route 127 is to be definitively excluded from carrying Yucca Mountain shipments, the DEIS should discuss the role State Route 127 could play in the Yucca Mountain transportation campaign.

Risk Analysis

Route choice will affect the safety, cost and timing of transport operations. DOE needs to engage in a comprehensive study of this issue in order to develop a scientifically defensible, least-risk-based determination of routes. Private carriers should not be burdened with the responsibility to evaluate and choose routes. The preferred corridors should be mapped by DOE and the required roadway and emergency response improvements identified. Narrowing the number of potential routes via risk analysis

allows evaluation of road, emergency response improvements, identification of impacted jurisdictions, quantification of costs and start up and maintenance requirements. Without such information, it is impossible to objectively choose among transportation options, for which the levels of risk and cost no doubt would vary greatly.

Specific Recommendation: The DEIS should include results of a comprehensive national-scale risk analyses to determine least-risk based solutions to the question of which roadway and rail corridors to use to increase the predictability of waste transportation operations. DOE should use the results of this analysis to systematically dictate routes to private carriers. Impacted populations and resources should to be clearly identified in the DEIS.

Emergency Response & Section 180(c) Considerations

Communities along State Route 127 constitute the most isolated populations in Inyo County. Assistance with roadway incidents must come from the Inyo County Sheriff Unit at Shoshone, Park Service Rangers dispatched out of Cow Creek near Furnace Creek, or California Highway Patrol also coming out of Death Valley or out of Pahrump, Nevada. Most of the route lies one to three hours from any public assistance. To deal with major roadway incidents, County Sheriff units are sent from Lone Pine, which is three hours away from the closest segment of SR127.

Currently, the State Route 127 towns of Tecopa, Shoshone, and Death Valley Junction are served by a single Volunteer Fire Protection District that is without ~~any~~ adequate funding. In case of a serious toxic or radiological release in Inyo County, specialist response teams must be brought in from either San Bernardino or Bakersfield, a process which takes a minimum of three to four hours, assuming that the response team is not occupied elsewhere. The closest medical facility of any note is in Pahrump, which is a minimum of thirty minutes from the closest segments of the road and several hours away from the furthest. The closest fully equipped hospital is in Las Vegas, which is at least two hours away from the closest sections of SR127.

State Route 127 serves much of the tourist traffic flowing into Death Valley National Park from Las Vegas and Southern California, with recent estimates showing park usage on the order of 1.4 million visitors/year. Considerable increases in traffic volume are expected to accompany the growth of California and of both Pahrump and Las Vegas, Nevada (the Nation's fastest-growing medium-size and large cities, respectively). Also, there are approximately 1000 acres of land in the vicinity of the town of Death Valley Junction (intersection of SR127 and SR190) that may be released to the Timbisha-Shoshone tribe for their use. If developed to mixed residential and commercial uses, this territory could host an unknown number of additional residents and contribute significantly to traffic on Route 127. Per information received from Caltrans, the route is not scheduled for major improvements through 2015.

The Nuclear Waste Policy Act, Section 180(c) calls for Federal action to provide improvements in emergency response training and capability along routes designated for the transport of high-level nuclear waste and spent fuel. The virtual absence of emergency response capability on Route 127 and the isolated character and the current configuration of this roadway promise to make compliance with this part of the Act an

involved and expensive exercise on the part of the Federal Government. The DEIS makes no attempt to configure or estimate the required dedications of Federal resources necessary to meets its obligations under Section 180(c).

Other necessary improvements prerequisite to regular use of SR 127 include complete reconstruction of some sections of the roadway and the construction, equipping and staffing of emergency response stations. The County and the State will be saddled with significant new costs to safeguard its residents. The EIS fails to address, in any manner, the significant fiscal and possibly significant environmental impacts of meeting these obligations. These impacts are inseparable from the issue of the repository itself and need to be quantified by the EIS.

Specific Recommendation: Based on the results of the previously mentioned transportation risk analysis, DOE must identify roadway and emergency response improvements necessary to safeguard residents and resources in the vicinity of California State Route 127, consistent with implementation of Section 180(c) of the Nuclear Waste Policy Act. The costs of these improvements and their maintenance for the duration of the Yucca Mountain repository transportation campaign should be estimated as part of the *fiscal impact analysis* necessary to compare and eventually designate waste transport corridors for the project.

Rail-Focused Transportation

Inyo County has stated a preference for rail-focused options which either 1) offload spent fuel and high-level waste east of Yucca Mountain, (e.g. Caliente, Nevada) to proceed via highway to the repository; or 2) provide for rail directly up to the waste handling facility proposed at the repository. Use of rail minimizes highway miles, and reduces the likelihood that alternate and emergency highway routes will be needed. A comprehensive risk analysis for all reasonable transportation scenarios would provide the quantitative information necessary to confirm or deny the value of a rail-weighted transportation campaign.

Transportation-Specific NEPA Evaluation

The transportation campaign is an integral part of the Yucca Mountain project. It is inseparable from the operation of the proposed repository. Consideration, in detail, of transportation impacts cannot reasonably be deferred to future analysis any more than other off-site impacts. Without detailed information on likely primary and secondary routes in California and the staging of shipments, it is impossible for Inyo County to evaluate the impacts of the shipping campaign on our area. While it is DOE's contention that the DEIS is sufficient to serve as the "umbrella" environmental impact document for future Federal transportation decisions, the DEIS fails to include the data, mapping and analysis sufficient to compare routes and support even general route designations. Absent transportation specific impact analysis in the DEIS, it is impossible to determine the suitability of a repository at Yucca Mountain.

Groundwater

Inyo County Hydrologic Studies

The DEIS recognizes uncertainties about groundwater flow boundaries among sub-basins within the Death Valley groundwater basin. Contamination of the deep regional aquifer, which appears to underlie both Yucca Mountain and the Tecopa-Shoshone-Death Valley Junction area, poses the most significant long-term threat to the citizens and economy of Inyo County. Inyo County, in conjunction with Nye and Esmeralda Counties (Nevada) and the USGS, have engaged in groundwater research which points to a direct connection between water in the deep 'Lower Carbonate Aquifer' beneath Yucca Mountain and surface discharges (springs) in Death Valley National Park (*"An Evaluation of the Hydrology at Yucca Mountain: The Lower Carbonate Aquifer and Amargosa River"*, Inyo & Esmeralda Counties, 1996, and *"Death Valley Springs Geochemical Investigation"*, Inyo County, 1998, provided as Attachments A & B). These studies were funded with DOE grant money and done to a high standard of scientific accuracy, being subject to Federal (USGS) quality assurance and quality control measures.

The 1996 study of the Lower Carbonate Aquifer suggests a significant degree of hydrologic connectivity between the Lower Carbonate Aquifer lying beneath the proposed repository and surface manifestations of the same formation within Death Valley National Park. The study also indicated that populations in Amargosa Valley (including the California towns of Death Valley Junction, Shoshone, and Tecopa) utilize groundwater that may be hydrologically contiguous to a southward extension of the Lower Carbonate Aquifer.

The 1998 investigation of the geochemistry of spring waters in the mountains east of Death Valley (some of which are developed to serve domestic and commercial uses in Death Valley) gave indications that these spring waters may be dominated by input from the Lower Carbonate Aquifer, perhaps via relatively fast pathways through fractures in the formation. It should be noted that these same springs also sustain populations of a number of threatened and endangered species.

The Draft Environmental Impact Statement does not address our findings, either to acknowledge or deny the implications of these studies with regard to potential pathways for contaminants to reach human populations or a National Park. Our studies, which have been available to DOE for some time, are absent from the estimated 50,000 pages of technical background material which went into development of the DEIS. We are formally including, by reference, these studies into our comments on the DEIS. The County considers this a critical oversight on the part of DOE, which should be rectified by serious consideration of our scientific work and placement of our findings in the proper context.

Specific Recommendation: DOE must review the above-cited research products for merit, incorporating the information into the hydrology database compiled for purposes of evaluating potential impacts to regional aquifers. If our reports have been submitted using a format or methodology not acceptable to DOE, Inyo County should be informed immediately to allow the County to redirect our research and reporting efforts.

Repository Design & Performance

Selection of a Repository Design

It is recognized that the repository design is still evolving outside of the EIS process and that the specific design of the repository is not yet known. In order for the EIS to be useful to the Nuclear Regulatory Commission in its consideration of DOE's license application for construction of the repository, the specific impacts of the chosen specific design will need to be determined, to the extent possible, and incorporated into the Final EIS.

Assuming that the impacts of the design chosen for the repository remain within the bounds of those environmental impacts considered in the DEIS (i.e. the EIS remains valid for the chosen design), the Final EIS should include a detailed description of the selected repository design and an analysis of its potential impacts, including a comparison with reasonable alternatives that were considered and discussion of any impact mitigation measures which were incorporated into the design subsequent to distribution of the DEIS.

Groundwater Impacts

After release of the DEIS, DOE - in response to a Nuclear Waste Technical Review Board critique of the original proposal for a "hot" (high thermal loading) repository - opted for a "cool" design. The choice of a low thermal loading design appears, to the best of our knowledge, to be based on DOE's finding that the cooler design is easier to model, not because there is evidence that this is an otherwise superior alternative.

The change of repository design from a "hot" repository to a "cool" repository has major and insufficiently researched implications for groundwater flow and groundwater chemistry. A hot repository has the potential to intercept and boil off groundwater infiltrating through the tuffaceous material above the emplacement blocks, thereby heading off the input of contaminated liquids into the saturated zone. A hot repository also, however, may accelerate waste package disintegration and increase the density and size of local rock fractures, accelerating contamination of the saturated zone. There is insufficient information on the behavior of the hydrology and geology of Yucca Mountain to develop a balanced design that minimizes or avoids contact between water and waste materials. This being the case, the current state of knowledge and information available to preparers of the DEIS is inadequate to development of a NEPA document sufficient to support a decision on repository design.

It is DOE's contention that the DEIS is sufficiently broad in its treatment of repository design variations to cover the switch to a cooler repository, however, recent technical discussions on repository performance conducted by the Advisory Committee on Nuclear Waste and the Nuclear Waste Technical Review Board reflect considerable uncertainty in our understanding of how the repository will behave under the cooler design. We do not believe that the current state of knowledge on repository performance lends itself to a determination that the DEIS is adequate to support a decision on which design should be adopted.

Specific Recommendation: Given the inadequate state of knowledge on the viability of the various design variations described in the DEIS, the current DEIS cannot be used as the basis for choosing the specific design to be submitted to the NRC for licensing. Choice of repository design must be deferred until sufficient research has been completed to allow for an informed choice. The selection process should be subject to separate NEPA treatment at the appropriate time.

Mitigation of Groundwater Impacts

All of the design alternatives considered in the EIS lead, ultimately, to a repository that is expected to leak (albeit at different rates depending on the particular choice of tunnel configuration, waste packaging, assumptions regarding geology, climate, and the response of the waste packages to the repository environment). Given the scale and complexities of the aquifers subject to potential contamination by the project, mitigation of impacts to these resources will range somewhere between extremely expensive to completely impossible. The DEIS should explain DOE's stance on providing mitigation, and either consider the adoption of feasible mitigation measures or state that such impacts cannot or will not be mitigated by the Federal government.

Waste Package Design

It is recognized that the Nuclear Regulatory Commission has recently initiated a new program of cask testing which proposes to subject transportation cask prototypes to an expanded range of physical tests. Since the nature and, of course, results of these tests are at present unknown and cask options cannot be evaluated via the NEPA process at this time, the current Yucca Mountain DEIS cannot be used as a base document from which to tier off a NEPA evaluation of possible cask designs. Further discussion of cask designs at this time is therefore unwarranted.

Monitoring and Retrieveability

needs a third party independent retrieval monitoring

DOE's proposal calls for backfilling of the emplacement drifts and closure of the repository between 50 and 300 years after disposal operations begin. Backfilling and closing the repository prohibits monitoring of the waste packages for structural integrity and increases the difficulty and cost of retrieving the waste should a radioactive release occur or new findings and technologies emerge which provide for safer forms of storage or reuse of the nuclear material.

Contrary to the expectation incorporated into DEIS that significant radioactive releases from the repository are inevitable, DOE must adopt as its goal complete and permanent isolation of radioactive material from humans. In our estimation, the only way to both meet this goal and to mitigate the many uncertainties associated with repository performance is to have a permanently open and thoroughly monitored facility. DOE should not attempt to anticipate a closure date for the repository and should quantify, to the extent possible, the fiscal impact of funding a closely monitored facility capable of retrieving and replacing failed waste packages.

Waste Retrieval
Supplement - inadequate
NEPA appeal reasons
Appeal Final

Economic Development Considerations

Groundwater modeling used as the basis for the DEIS does not take into account the potential for accelerated transport of radionuclides due to projected increases in regional groundwater extractions. Growth in Pahrump, the Amargosa Valley, and possible development of pending regional groundwater claims by the City of Las Vegas may lead to significant changes in the direction and volume of groundwater flow from Yucca Mountain. It is well within the ability and purview of DOE to attempt a reasonable projection of the effects of urban development on the regional groundwater system and to incorporate these expectations into the groundwater models utilized in development of the DEIS.

Specific Recommendation: Groundwater modeling conducted in support of the repository site evaluation process must be reworked to incorporate reasonable projections of future regional groundwater usage. The likely effects of regional groundwater development on contaminant plume paths, velocity and radionuclide concentrations should be projected and mapped.

Colloidal transport need to be considered per Rev. 1

Socioeconomic Impacts

Socioeconomic impact analysis in the DEIS is limited to regional impacts on employment, housing and other standard economic indicators. There is no analysis of potential socioeconomic disturbances due to repository operation and transportation under both normal and accident conditions. Conversely, the DEIS lacks discussion of the impact of socioeconomic changes on the operation of the repository. Growth rates and development expectations along transportation corridors, and the implications of same for the evolution of new transportation risks during the 30-year span of repository operations are not considered.

The knowledge that nuclear waste transportation or accidents are associated with particular locations/roadways can have adverse economic impacts to those locations due to accumulating stigma. Inyo County, with its tourism-based economy revolving around the use of Death Valley National Park, is particularly vulnerable to the economic impacts of stigma. The same holds true for risks associated with possible contamination of the regional aquifer serving commercial uses in Death Valley. In light of the economic benefits received by the County and the State of California from Death Valley National Park (which on average receives 1.4 million visitors per year), the security and public perception of State Route 127 is of utmost importance. The EIS should consider the potential socioeconomic impacts of stigma associated with the proposed action and evaluate potential mitigation options.

The project could also affect property values in the southeastern portion of the County, an area that is likely to experience considerable growth during the 30-year time-span for which the repository would accept waste. The DEIS, if it is to truly function as a tool for analyzing the impact of the repository, must attempt to project the economic consequences of the designation of specific waste hauling routes and of repository contamination of the regional groundwater system on local economies.

Conclusory Remarks

The DEIS admits to significant uncertainties in 1) the final repository design; 2) the expected performance of both natural and man-made barriers to radionuclide release; 3) the response of the natural environment (transport mechanisms) to inputs of radioactive materials; and 4) the health impacts of the expected radiological contamination of the regional aquifer. The DEIS fails to address in a meaningful way issues of transportation or socioeconomic impacts and does not provide well-developed alternatives for consideration by the public or decision makers. None of the design options result in a repository that isolates radionuclides from the accessible environment. Cumulatively, the current level of uncertainty associated with the project and the lack of scientific information necessary to reduce some of the major uncertainties makes it difficult to imagine that the document will be found adequate for use by the Nuclear Regulatory Commission in its consideration of DOE's application for a license to construct a repository.

The absence of meaningful treatment of the environmental impacts of the transportation component of the project is a major flaw in the Draft Environmental Impact Statement which will eventually require that DOE develop a second Environmental Impact Statement specific to transportation issues. This being the case, Inyo County objects to the use of the current DEIS as the basis for future decision-making on waste transport and requests that DOE either: 1) amend the DEIS to address the full spectrum of impacts accruing to operation of the repository and recirculate the Draft for further review; or 2) acknowledge the need for a transportation-specific EIS for the proposed repository, issue a notice to DEIS reviewers specifying that the DEIS does not address transportation impacts and initiate the scoping process for the transportation EIS.

The DEIS as a whole is narrowly scoped, to the degree that comprehensive analysis of the impact of the proposal is impossible. Taking into account those NEPA exemptions granted by Congressional action, the development of project alternatives in the DEIS remains unnecessarily restricted, obstructing attempts to weigh the costs and benefits of the proposed repository. It is unclear whether a Supplemental EIS or a new EIS is needed. Typically, a Supplement needs to be prepared if new information or circumstances become apparent. In the case of Yucca Mountain, the information DOE would require to correctly draft an EIS is either: 1) already available or readily developed (e.g. data prerequisite to rail and road corridor risk analysis); or 2) unlikely to be available in the near future (such as statistically significant data on waste package, emplacement drift or aquifer behavior). The revised DEIS needs to differentiate clearly between the known and the unknowable for the benefit of both reviewers and future decision-makers.